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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

France Telecom, S.A., Plaintiff,

vs.

Marvell Semiconductor, Inc., Defendant.

Case No. 3:12-cv-4967-WHO

PLAINTIFF'S CLAIM CONSTRUCTION REPLY BRIEF

Date:
Time:
Place: Courtroom 2, 17th Floor, San Francisco Courthouse
Judge: Hon. William H. Orrick

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I. INTRODUCTION

Marvell does not dispute that Fig. 1 of the '747 Patent accurately illustrates Dr. Berrou's breakthrough invention in error correction technology, which is widely implemented by communications equipment throughout the world. This fact is confirmed by the patent itself: "FIG. 1 is a block diagram illust[r]ating the basic principle of the coding method of the invention, called 'parallel concatenation' coding." U.S. Patent No. 5,446,747 ("the '747 Patent"),[1] 7:8-10.

Rather, Marvell's claim construction arguments turn on the remarkable proposition that the claims of the '747 Patent are misworded and do not cover the invention shown and described in the '747 Patent's figures and text. Defendant Marvell Semiconductor, Inc.'s Responsive Claim Construction Brief (D.I. 91, hereafter "M. Br.") at 5 ("As explained below, the ordinary meaning of the claims to a person of ordinary skill in the art appears to conflict with the disclosure of Figures 1 and 2.") Marvell's approach to claim construction in this case is incorrect both as a matter of law and as a matter of fact.

First, the entire purpose of claims is to identify those aspects of the patent specification for which the inventor claims exclusive rights. *See* 35 U.S.C. § 112(b). Accordingly, a claim construction that excludes the invention as described in the specification is "rarely, if ever, correct." *See Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010).

Second, as a matter of fact, the claim terms in question, "convolutional coding," "systematic convolutional coding," "at least two independent and parallel steps of systematic convolutional coding," and "data element," are all clearly described and explained in the patent specification. Moreover, the patent's use of those terms is entirely consistent with their plain meaning as understood by those skilled in the art.

II. ARGUMENT

The entire purpose of claims is to act as pointers back to the specification so that the Court can determine those aspects of the disclosure that the inventor considers to constitute his or her invention. *See* 35 U.S.C. § 112(b) ("The specification shall conclude with one or more claims particu-

[1] A copy of the '747 Patent was attached as Exhibit 1 to the Declaration of Richard Koehl (D.I. 84, hereafter "Koehl Decl.") submitted with France Telecom's opening brief.

larly pointing out and distinctly claiming the subject matter which the inventor … regards as the invention."). It is for this reason that claims are to be construed in light of, and in a manner that is consistent with, the specification. *See generally Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). It is therefore highly unusual for a court to construe a patent claim in a manner that excludes the preferred embodiment of the invention as shown in the patent. *See Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010); *SEB SA v. Montgomery Ward & Co.*, 594 F.3d 1360, 1369 (Fed. Cir. 2010) ("[W]ith the preferred embodiment showing a vertical stabilizing screw, the 'completely free' limitation cannot be read so broadly as to exclude this preferred embodiment."), *aff'd sub nom. Global-Tech Appliances, Inc. v. SEB SA*, 131 S. Ct. 2060 (2011); *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1377 (Fed. Cir. 2005) ("Because a literal construction of the term 'dust-free and non-dusting,' which PPG advocates to mean 'no dust cloud whatsoever,' would not read on the preferred embodiment, we agree with the district court that a person of ordinary skill in the art would not interpret this term in that manner."); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996); *Conceptus, Inc. v. Hologic, Inc.*, No. C 09-02280 WHA, 2010 WL 1222771 at *9 (N.D. Cal. Mar. 24, 2010); *Geo. M. Martin Co. v. Alliance Mach. Sys. Int'l, LLC*, No. C 07-00692 WHA, 2007 WL 4105832 at *4 & n. (N.D. Cal. Nov. 16, 2007); *Affymetrix, Inc. v. Multilyte, Inc.*, No. C 03-03779 WHA, 2005 WL 6220111 at *11 (N.D. Cal. Feb. 22, 2005); *Siliconix Inc. v. Alpha & Omega Semiconductor Inc.*, No. C 03-4803 WHA, 2004 WL 5645572 at *2 (N.D. Cal. Sept. 10, 2004).

Marvell does not even attempt to address these cases, which France Telecom cited in its opening brief. *See* Plaintiff's Opening Claim Construction Brief (D.I. 83, hereafter "FT Br.") at 8-9. Instead, citing *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1213 (Fed. Cir. 2008) and similar cases, Marvell argues that the claims are inconsistent with the patent specification and should be interpreted as not covering the embodiments shown in the '747 Patent specification. But *Lucent* and Marvell's other cases only apply when the claim language is unambiguously contrary to the intended scope of the invention. *See Lucent*, 525 F.3d at 1215-16. Thus, for example, when the specification said a gearbox "cannot pivot … perpendicular," but the claim said it pivots "only … perpendicular," the Court refused to rewrite the claim. *See Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336,

1349 (Fed. Cir. 2002).[2] That is not the case here. In fact, as discussed below, the claim terms in question—"convolutional coding," "systematic convolutional coding," "at least two independent and parallel steps of systematic convolutional coding," and "data element"—are all clearly described and explained in the patent specification and are entirely consistent with the plain meaning of those terms as understood by those skilled in the art.

Moreover, because "the person of ordinary skill in the art is deemed to read the claim term" in the "context of the entire patent, including the specification," "the court starts the decisionmaking process" of claim construction by reviewing the intrinsic record: the claims, patent specification, and file history. *See Phillips*, 415 F.3d at 1313-17. Extrinsic evidence, in contrast, is disfavored (though not forbidden) and held to be "less significant" than intrinsic evidence. *See id.* at 1317-21. Expert evidence in particular "can suffer from bias" and can "leav[e] the court with the considerable task of filtering the useful … from the fluff." *See id.* at 1318. As Prof. Mitzenmacher of Harvard University explains in his rebuttal declaration on a paragraph-by-paragraph basis, Marvell's expert, Prof. Min, ignores the actual description in the patent and offers only vague pointers to external references that do not give weight to his opinions (and, in fact, contradict them).[3]

Accordingly, because France Telecom's construction best follows the understanding of what the inventors "actually invented" and "intended to envelop" with the claim, and because it "stays true to the claim language" and "most naturally aligns" with the patent's description of the invention,

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[2] *See also Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed Cir. 1999) (reversing construction which "adopted a construction of 'flashlight' that is at odds with the clear language of the claim and the written description"). In *SRAM Corp. v. AD-II Eng'g, Inc.*, 465 F.3d 1351, 1359 (Fed. Cir. 2006), the entire innovation was a single "indexed" shift actuator, but the claim "fail[ed] to recite any indexing." *Quantum Corp. v. Rodime, PLC*, 65 F.3d 1577, 1584 (Fed. Cir. 1995) concerns reexamination, *see* 35 U.S.C. § 305, which is irrelevant to this case.

[3] Contrary to Marvell's allegations, Patent L.R. 4-5(c) permits France Telecom to file "any evidence directly rebutting the supporting evidence contained in an opposing party's response," and the Court's Orders do not forbid rebuttal evidence. (D.I. 42.) In the Patent L.R. 4-3 submission, France Telecom advised that "Prof. Mitzenmacher may provide opinions in response to the testimony or declarations of any expert identified by Defendant relating to this claim term." (D.I. 81, Ex. B at 2, 3, 5-7.) Prof. Mitzenmacher's rebuttal declaration identifies specific points of disagreement with Prof. Min's declaration and directly responds. Prof. Mitzenmacher raises no new points that could have been addressed at the outset; it is not possible to rebut a declaration one has not seen. Moreover, neither party bears the burden of proof in claim construction—although, to the extent Marvell makes invalidity arguments, it is ***Marvell's*** burden to come forward with "clear and convincing evidence" of invalidity. *See Microsoft Corp. v. i4i Ltd. P'ship*, 131 S.Ct. 2238, 2242 (2011). Marvell's purported rule would have parties needlessly inundate Chambers with massive opening declarations that would afford little assistance to the Court as it construes the claims.

it is, "in the end, the correct construction." *See Renishaw PLC v. Marposs Societa'per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998).

A. "convolutional coding"

France Telecom's Proposed Construction	Marvell's Proposed Construction
No construction necessary, *or if the Court concludes construction is necessary,* "codes that associate to each source data element at least one coded data element which is a combination of the source data element and at least one previous source data element"	"calculating an output data element representing current input data using current and prior input data"

As demonstrated in France Telecom's opening claim construction brief, the '747 Patent explicitly defines the term "convolutional coding" at column 1, lines 46-53. *See* FT Br. at 6-7. France Telecom's proposed definition is consistent with this express definition; Marvell's is not. That should end the matter. *See Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1380 (Fed. Cir. 2009) ("When a patentee explicitly defines a claim term in the patent specification, the patentee's definition controls."). Nevertheless, Marvell argues that the '747 Patent's express definition should not control in this case. Marvell's arguments lack merit.

First, relying on *Sinorgchem Co. v. Int'l Trade Comm'n*, 511 F.3d 1132, 1136 (Fed. Cir. 2007), Marvell contends that the patent's explicit definition, which begins with "Convolutional codes are…," is not really a definition at all because it does not include quotation marks. But Marvell's argument is not supported by its own citations. As *Sinorgchem* itself recognizes, verbs such as "is" or "are" are sufficient to identify an explicit definition. *See id.* at 1136 ("Moreover, the word 'is,' again a term used here in the specification, may signify that a patentee is serving as its own lexicographer.") (citations omitted). The statement beginning with "Convolutional codes are…" appears at the very outset of the '747 Patent, at the first discussion of convolutional coding, and introduces and defines convolutional coding as it is used in the remainder of the patent. By using "are," the '747 Patent clearly defines convolutional coding. That definition controls.

Second, Marvell contends that the patent's definition of "convolutional codes" is somehow inconsistent with a purportedly different concept called "convolutional coding" or with the parties' agreed construction of "source data elements." Neither objection has merit. The '747 Patent does not identify any distinction between codes or coding, the written extrinsic evidence uses "codes" and

"coding" interchangeably, and the definition itself identifies how the codes are obtained. (*See also* Rebuttal Declaration of Prof. Michael Mitzenmacher (hereafter "Mitz."), ¶ 20.)

The patent's definition of "convolutional coding" is also consistent with the construction of "source data elements," which the parties have agreed means data elements "to be coded by the claimed method." (*See* D.I. 81 at 2.) The parties' agreed construction says nothing about the *sequence* of the source data elements. In the patent, the inputs to both coding steps are still the same source data elements "to be coded by the claimed method." In at least one of the coding steps, Claim 1 requires that the "source data elements [be] taken into account" in a different order by virtue of the temporal interleaving step. *See* '747 Pat., Claim 1; *see also id.*, 3:15-25, 4:24-26 ("This interleaving step enables all the source data elements to be taken into account and coded, but according to different sequences for the codes."), 7:66-8:2 ("An essential feature of the invention is that the coded data elements Y_1 and Y_2 take account of the same source data elements d, but these are considered according to different sequences, through the use of the interleaving technique."), Fig. 1. Indeed, Marvell recognizes this fact in another section of its brief: "The prosecution history, however, makes clear that the 'entirety of the source data element sequence' is applied to both steps of convolutional coding, meaning 'two independent codings take place.'" M. Br. at 18.

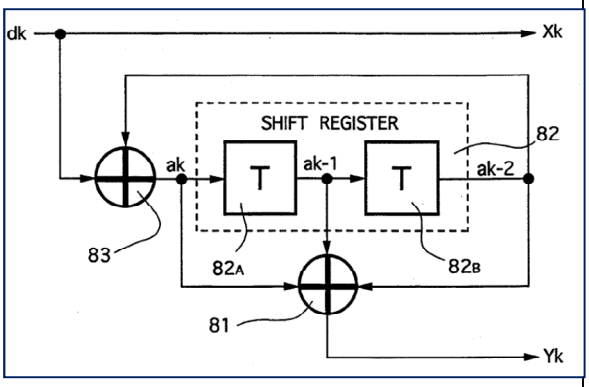
Notably, Marvell does not, and cannot, argue that the patent's explicit definition adopted by France Telecom is contrary to the plain and ordinary meaning shown by all the other evidence. Indeed, the '747 Patent's definition is not a "special" meaning, but that plain meaning. In comparison with intrinsic evidence like the claim language, specification, and file history, extrinsic evidence is "less significant" in claim construction and generally is afforded little weight. *See Phillips*, 415 F.3d at 1317. But here the patent's definition is entirely consistent with that extrinsic evidence. In each reference cited by Marvell, the convolutional codes associate to each source data element at least one coded data element which is a combination of the source data element and at least one previous source data element. (Mitz., ¶¶21-22.) Nor does Marvell respond to France Telecom's observation that Marvell's construction mimics the patent's explicit definition in the most vague and overbroad way in order to bring in "block coding" prior art. Because the '747 Patent unambiguously defines the term "convolutional coding" in a way that precisely delineates it and leaves no room for confusion,

France Telecom's construction should be adopted.

B. "systematic convolutional coding"

France Telecom's Proposed Construction	Marvell's Proposed Construction
No construction necessary, *or if the Court concludes construction is necessary,* "convolutional coding in which the source data elements are transmitted jointly with coded data elements"	"convolutional coding where the output includes both the coded data and the current input data"

As Marvell's brief correctly notes, Fig. 7 of the '747 Patent illustrates an example of circuitry for performing systematic convolutional coding. *See* M. Br. at 11 & n.5. As shown in Fig. 7 (at right), the unencoded source code data elements are fed into an element 83 and from there to elements 82a, 82b, and element 81. These elements cooperate to create a coded bit from the source data elements which is output at Y_k. This process is considered "systematic" because, in addition to being processed by elements 81-83, the source data elements d_k are also passed ***without encoding*** to the output X_k for transmission. This is also shown in Fig. 1 of the '747 Patent, where the source data elements d are: (i) processed by two convolutional coders; and in addition (ii) passed through to the output X for transmission without encoding. To more clearly illustrate this point, the diagram below illustrates the correspondence between the circuitry shown in Fig. 7 of the '747 Patent and the circuitry for performing the first systematic convolutional coding in Fig. 1:



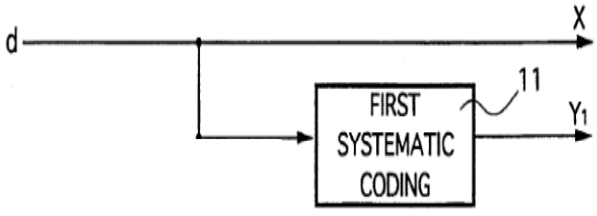


Fig. 1 modified to show only one systematic convolutional coding step

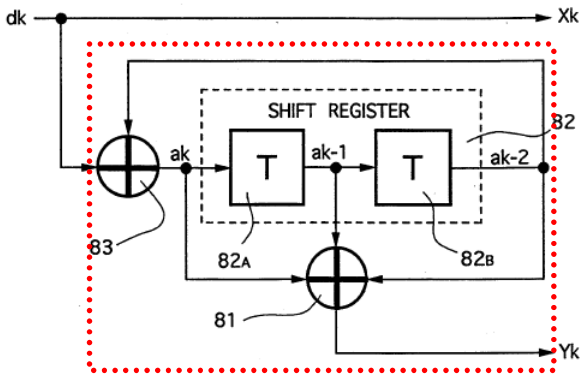


Fig. 7 modified to highlight the correspondence between elements 81-83 and element 11 in Fig. 1

As the above figure demonstrates, elements 81-83 in Fig. 7 represent the circuitry found in element

11 in Fig. 1 for creating coded output Y, while the line from d_k to X_k in Fig. 7 corresponds to the line from d to X in Fig. 1. Notably, the unencoded output X_k is not operated on by any components of the coder (81-83) and is just passed through without modification.

The patent clearly illustrates and describes how to provide a second parallel convolutional coding step. Specifically, Fig. 1 of the patent shows that coding element 13 is added in parallel to the first coding element 11. The second coder operates on the same source data elements but does so after they have been fed through an interleaver which changes their order.

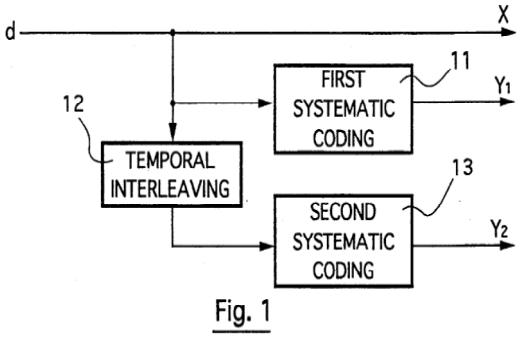


Fig. 1

Fig. 1 (stretched vertically for comparison)

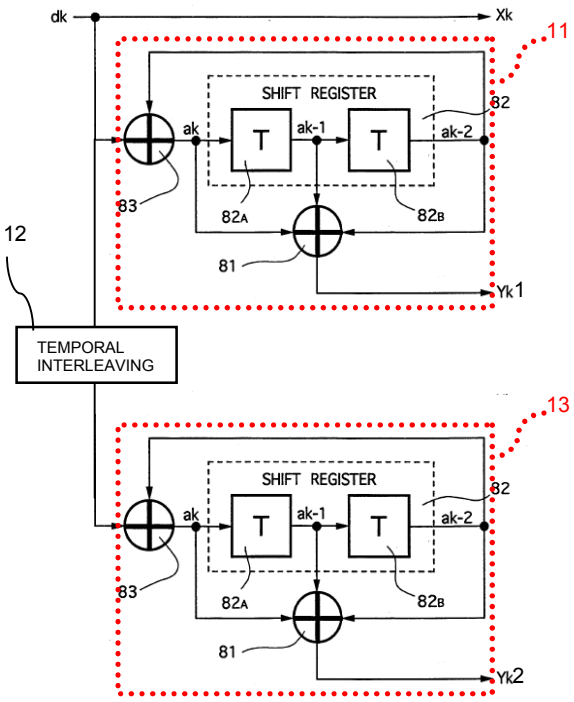


Illustration of two parallel systematic convolutional coding steps using the circuitry in Fig. 7

As the above figure demonstrates, the second coder 13 includes a second set of identical elements to those discussed above (i.e., elements 81-83) and produces an output Y_{k2}. This second coding step is similarly "systematic" because the unencoded source code elements are passed through to the output X for transmission without being encoded. (Mitz., ¶25.)

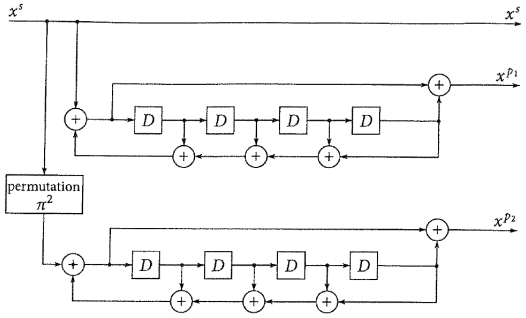
Marvell and Prof. Min argue that each systematic coding step must output its own unencoded source code data elements. This construction is incorrect for a number of reasons. ***First***, it is contradicted by Fig. 1, which clearly demonstrates that two parallel coding steps can each be systematic even though the original unencoded source data elements are transmitted only once with the outputs

Y_{k1} and Y_{k2}. ***Second***, Marvell's and Prof. Min's position is contradicted by other aspects of the patent. In particular, adopting Prof. Min's approach, the patented error-correction method would have a 1/4 efficiency rate because four elements would be transmitted for each source data element: ***two*** copies of the source data element (X), one convolutionally encoded data element (Y_{k1}), and a second convolutionally coded data element (Y_{k2}). The patent, however, describes the patented method as having a 1/3 efficiency rate. *See* '747 Pat., 3:36-44. (Mitz., ¶ 23.) France Telecom's construction, by contrast, correctly provides for a 1/3 efficiency rate because, as clearly shown in both Figures 1 and 2 and described in the patent specification, the transmission of the source data elements is done once and shared. *See* '747 Pat., 3:36-44, 7:50-59, 8:12-14. (Mitz., ¶ 23.)

Marvell and Prof. Min further argue that because the input to the second coding step is interleaved, it does not constitute a systematic convolutional code unless the unencoded source code data elements are transmitted in the interleaved order. That is simply incorrect. The ordering of the source data elements in any systematic error-correcting code does not matter, as long as both the source and the receiver/decoder know the order in which the source data elements appear. All that is needed is that the source and the receiver agree on where each of the source data elements will be found in the stream. (Mitz., ¶¶ 22, 26.) Thus, contrary to Prof. Min's argument, systematic coding does not require that the unencoded elements be transmitted in a specific order, just that they be transmitted, and he does not cite any evidence to the contrary. (Mitz., ¶ 26.)

The extrinsic evidence Prof. Min relies on is "less significant than the intrinsic record" in claim construction because, among other reasons, it "does not have the specification's virtue of being created at the time of patent prosecution for the purpose of explaining the patent's scope and meaning." *See Phillips*, 415 F.3d at 1317-18. Moreover, this extrinsic evidence is irrelevant because it does not deal with how one would understand the term "systematic convolutional coding" in the context of **parallel** convolutional coding steps, since Dr. Berrou was the first to invent that coding methodology. In fact, the full historical record shows that, persons of ordinary skill in the art ***actually do*** understand "systematic convolutional coding" when applied to parallel convolutional coding steps in the sense of France Telecom's proposed construction. For example, *Modern Coding Theory* by Richardson and Urbanke (Cambridge Univ. Press 2008) explains that a standard parallel con-

catenated turbo code with two concatenated codes sends three streams of data, x^s, x^{p1}, and x^{p2}. "We call x^s the systematic bit stream and x^{pi}, $1 \leq i \leq 2$, the i-th parity bit stream." (Supplemental Declaration of Richard Koehl (hereafter "Suppl. Decl."), Ex. 1 at FT004432; *see also id.*, Fig. 6.13 at FT004433 (at right); Mitz., ¶¶ 27, 41.)



Citing *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1213 (Fed. Cir. 2008) and similar cases, Marvell argues that France Telecom is asking the Court to rewrite the claim language, and that claims "need not" be construed to cover the preferred embodiment." M. Br. at 14-15. But France Telecom is not asking the Court to rewrite the claim. Claim 1 includes the phrase "systematic convolutional coding." As both parties admit, the claim language is silent as to whether the input, uncoded data elements are also provided as outputs of the systematic convolutional coding steps. *See* FT Br. at 10-11; M. Br. at 13-14. As explained *supra* at 2-3, *Lucent* and Marvell's other cases apply only when the claim language is unambiguously and directly contrary to the intended scope of the invention. That is not the case here, where the specification and claims are consistent.

C. "at least two independent and parallel steps of systematic convolutional coding"

France Telecom's Proposed Construction	Marvell's Proposed Construction
No construction necessary, *or if the Court concludes construction is necessary,* "at least two steps of systematic convolutional coding that are performed in parallel rather than in series, including without limitation as shown in Figures 1 and 2"	"at least two separate and distinct steps of systematic convolutional coding, not in series, simultaneously carried out"

Marvell completely ignores France Telecom's primary contention that the phrase "at least two independent and parallel steps of systematic convolutional coding" needs no construction because the plain meaning of this term is straightforward: (a) ***at least two steps*** of (b) ***systematic convolutional coding*** that are (c) ***not dependent*** (unlike the prior art methods in which "the data elements coded by a first coder feed a second coder," *see* '747 Pat., 1:60-61) and (d) ***parallel*** (as is readily apparent in Figures 1 and 2 and as explained in the specification in contrast to prior art "series concatenation" encoders, *see, e.g.,* '747 Pat., 3:26-35). *See* FT Br. at 13-15.

Instead of addressing France Telecom's primary contention, and apparently intending to

manufacture an invalidity argument, Marvell seeks to redefine the claim language so that "parallel" and "independent" mean something other than their plain English meaning. But the recent decisions of the Federal Circuit and this Court (including in June, 2013) confirm that there is no need to construe a phrase written in plain English. *See Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) (finding "no error" in adopting the construction "plain and ordinary meaning" and distinguishing *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351 (Fed. Cir. 2008)); *Cave Consulting Group, Inc. v. Ingenix, Inc.*, No. C 11-0469 EJD, 2013 WL 2467930 at *5-*6 (N.D. Cal. June 7, 2013) (considering *O2 Micro* but holding "Given the consistent explanation of this term throughout the … patent, the court finds that the jury will likely not be confused by its plain meaning"); *Network Protection Sciences, LLC v. Fortinet, Inc.*, No. C 12-01106 WHA, 2012 WL 16033 at *4-*5 (N.D. Cal. Jan. 25, 2012); *see also Phillips*, 415 F.3d at 1314 ("In some cases, the ordinary meaning of claim language . . . may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words."). If the jury nevertheless must be provided with an abstract re-imagining of the claim language, then France Telecom's alternative construction is best.

Under Marvell's definition of "independent," the two systematic coding steps cannot share a sequence of systematic, uncoded source data elements. This is completely inconsistent with the '747 Patent. As explained in Section II.B, *supra*, the systematic convolutional coding steps transmit the input, uncoded source data elements (*i.e.*, the "systematic" data elements) jointly with the coded data elements. Whether the systematic data elements are obtained (1) directly from the source data elements, (2) as an output from the first coding step, or (3) (in a different, but known order) from the second coding step, they only need to be sent once. (Mitz., ¶¶ 22, 26.) Contrary to Marvell's argument, "independent" also does not mean that there must be some way for one coding step to be systematic and the other not to be. (Mitz., ¶¶ 25, 33-34.) As also shown above, both coding steps are systematic; "independent" just means that the steps function independently. (Mitz., ¶¶ 31, 33-34.) The specification makes this clear. The prior art concatenated coders, which the patent calls "series" concatenated coders, used the output of a first coder to "feed a second coder which 'overcodes' these data elements." '747 Pat., 1:58-62. The *second* encoders in the prior art did not obtain their inputs

from the source data elements, but rather from the coded data elements. Thus, they were "dependent" in that sense. In contrast, in Claim 1 (and in the rest of the patent) "*each* of [the] coding steps tak[es] into account of all of [the] source data elements" themselves. '747 Pat., Claim 1 (emphasis added). As even Marvell admits, the prosecution history is consistent: "The prosecution history, however, makes clear that the 'entirety of the source data element sequence' is applied to both steps of convolutional coding, meaning 'two independent codings take place.'" M. Br. at 18.

Marvell places great weight on extrinsic evidence to arrive at a purported "synonym" for independent. *See* M. Br. at 18 n.7. But as common sense and dictionaries show, the best synonym for "independent" is not "separate and distinct" as Marvell contends, it is "not dependent." (Suppl. Decl., Ex. 2; Mitz., ¶ 31.) Moreover, the purpose of claim construction is not to find "synonyms" for claim terms, especially when the meaning and scope of the term is clear on its face and in light of the specification. *See Static Control Components, Inc. v. Lexmark Int'l, Inc.*, 502 F. Supp. 2d 568, 575 (E.D. Ky. 2007) ("[A]rguing that 'dog' ought to be construed as 'canine' is no construction at all. The terms are mere synonyms that leave the Court to wonder what the point is. Under what circumstance would an accused dog infringe but an accused canine would not?"). Marvell simply does not respond to France Telecom's argument that it is legal error to import a different or additional phrase from the specification into the claim language, as Marvell does, in the absence of an explicit or implicit definition. *See* FT Br. at 15-16; *Phillips*, 415 F.3d at 1320 (referring to Marvell's approach as one of the "cardinal sins" of claim construction).[4] Nor does Marvell respond to France Telecom's argument that the patentee clearly knew how to describe a feature as "separate" and/or "distinct," as he used those terms elsewhere in the patent and claims, but chose not to use them here. *See* FT Br. at 15-16. If there must be some substitution of words for the claim's chosen word, "independent," France Telecom's reference to the figures in its proposed alternative construction—"including without limitation as shown in Figures 1 and 2"—best informs the jury of the meaning and scope of "independent" in Claim 1.

[4] There also was no express disavowal in the prosecution history. The doctrine of express disavowal does not relate to claim differentiation (*see* M. Br. at 18 n.7) but to whether the patentee clearly narrowed the scope of a claim term. *See Epistar Corp. v. Int'l Trade Comm'n*, 566 F.3d 1321, 1336 (Fed. Cir. 2009). The '747 Patent never narrowed the scope of "independent" to mean "separate and distinct," nor of "parallel" to mean "simultaneous."

Marvell's construction of "parallel" fares no better. The parties agree that parallel means "rather than in series," in agreement with the patent's contrast with prior art series coders. But Marvell attempts to engraft a further, narrowing limitation that the parallel steps be "simultaneously carried out." There certainly is no such express definition of "parallel" here. *See* '747 Pat., 7:31-34. The patent does not state that "simultaneously carrying out several coding operations" is the same limitation as "in parallel." *See id.* (Mitz. ¶29.) To the extent there is any implicit definition of "parallel" in the intrinsic record, the specification and prosecution history demonstrate that "parallel" is in agreement with the obvious plain language, geometrical interpretation as two or more lines, side by side, extending alongside one another. (Mitz. ¶ 30.) Figures 1 and 2 clearly show two, side by side, systematic convolutional coders. Nonsensically, according to Prof. Min's interpretation dependent Claim 4 could be "asynchronous"—that is, "not occurring at the same time"—and also "simultaneous." (Mitz., ¶ 35.) As for the file history, Marvell conveniently ignores that the Betts prior art reference concerns *decoders*, not the claimed *encoding* method. Marvell also conveniently leaves out the rest of the paragraph it cites, which clarifies that the patentee was not discussing simultaneity:

> There is further no suggestion that there should be parallel convolutional encoders 20, both of which are fed with all of the source data but taken in distinct order as required by the claims of the present application. Additionally, there is no suggestion in Betts that data is to be interleaved between the two coders to process two distinct series of data elements originating with the source data.

(Declaration of Dr. Paul S. Min (D.I. 93, hereafter "Min"), Ex. Q at FT000244.) Indeed, the full prosecution history record emphasizes that in Betts the messages were broken into pieces, with separate chunks distributed to decoders in a round-robin fashion. (Mitz., ¶32). And, contrary to Marvell's arguments but consistent with France Telecom's construction, Marvell's own extrinsic dictionary evidence shows that parallel can encompass the geometrical meaning of "side by side." (*See* Declaration of Eric Huang (D.I. 92), Ex. C at MSIFT00040306 ("3.a. Having comparable parts, analogous aspects, or readily recognized similarities."), Ex. E at FT004658 ("**parallel** Side by side, neither converging nor diverging."; Mitz. ¶ 30.) If there must be a construction of "parallel" in this phrase, France Telecom's construction's references to "rather than in series" and "including without limitation as shown in Figures 1 and 2" should best aid the jury.

Finally, Marvell attempts to argue that this claim term must be indefinite. But under 35

U.S.C. § 282, an issued patent is presumed valid, and the party challenging validity must present clear and convincing evidence to overcome this presumption. *See Microsoft Corp. v. i4i Ltd. P'ship*, 131 S.Ct. 2238, 2242 (2011). Marvell presents no evidence in support of its indefiniteness argument. It cannot. Indeed, indefiniteness is "inextricably intertwined" with claim construction; a claim term is indefinite only if it is "insolubly ambiguous" or "not amenable to construction." *See Biosig Insts., Inc. v. Nautilus, Inc.*, 715 F.3d 891, 898 (Fed. Cir. 2013); *Energizer Holdings, Inc. v. Int'l Trade Comm'n*, 435 F.3d 1366, 1368-69 (Fed. Cir. 2006). If the meaning of the claim term "is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree," it is not indefinite. *See Exxon Research & Eng'g Co. v. U.S.*, 265 F.3d 1371, 1375 (Fed. Cir. 2001). Because Marvell and its expert have had no difficulty proposing constructions for this term, Marvell's indefiniteness allegations fail. *See Wireless Agents, L.L.C. v. Sony Ericsson Mobile Commc'ns AB*, No. 3:05-cv-289-D, 2007 WL 273568 at *3 (N.D. Tex. Jan. 31, 2007) ("Sony has therefore failed to show that the meaning of claim term is indiscernible or insolubly ambiguous. Rather, it proffers a construction of the claim term as it appears in the … patent and urges that this construction is the only correct one.").

D. "data element"

France Telecom's Proposed Construction	Marvell's Proposed Construction
No construction necessary, or if the Court concludes construction is necessary, "a single unit of data"	"bits (1 or 0) or series of bits (i.e., a sequence of 1s and 0s) to be considered as a block"

Once again, Marvell ignores France Telecom's argument that "data element," being the patent's way of referring to the singular form (the *datum*) of a plural sequence of *data*, does not need construction. But as explained above in Section II.C, there is no need to construe a phrase written in plain English. *See Finjan*, 626 F.3d at 1207; *Cave Consulting*, 2013 WL 2467930 at *5-*6. Nevertheless, if a construction must be given, "a single unit of data" best describes a "data element."

Marvell admits that it is seeking to construe "data element" to include the common, amorphous, and nonspecific word "block" so as to imply that "block coding" prior art is somehow relevant to this case. *See* M. Br. at 21 ("[T]he concepts *disclosed in and claimed* by the patent apply to error-correction coding generally, whether convolutional *or block coding* is used.") (emphasis added). As

France Telecom explained in its opening brief, at the time of the invention there were two different types of codes in common use, "block codes" and "convolutional codes." FT Br. at 17-18. "Convolutional coding" is disclosed in the patent, is claimed in asserted Claims 1 and 10, and is even one of the subject terms of the present claim construction proceeding. "Block coding" is never mentioned in the '747 Patent and is not the subject of any asserted or unasserted claim. It is simply irrelevant here, and it should not be included when its only purpose can be to confuse the jury into thinking that "block coding" is "convolutional coding." (Mitz., ¶¶ 37, 38.)

Furthermore, Marvell's own extrinsic evidence emphasizes that, contrary to Marvell's proposed construction, coding need not operate only on binary 1s and 0s or bits. (Min, Ex. F at MSIFT00039455 ("Conventional encoders and decoders for error correction operate on binary, *or more generally Q-ary*, code symbols transmitted over a discrete channel."); *id*., Ex. J at MSIFT00040237 ("The input data, which is *usually* binary"), *id.*, Ex. H at MSIFT00040393 ("An (n, k) convolutional encoder over *a finite field F* is a k-input n-output constant linear causal finite-state sequential circuit.")(emphases added); Mitz. ¶¶ 36, 39, 40.) As explained in France Telecom's opening brief, the intrinsic record also emphasizes that the data elements are not limited to binary 1s and 0s or bits. Marvell places great weight on an assertion that, in spite of the patent's lengthy explanation of symbols, real variables, and multiple mathematical and other operations that may be performed on the data elements during the course of coding, "the type of coding or processing disclosed in the patent may be performed on a bit level, after the symbol or real variable *has been converted* to digital bits." M. Br. at 20 (emphasis added). The patent actually states the contrary, noting that data elements *can* be sampled on digital bits, but "ideally" they are not sampled on bits: "The variables (X), (Y) and (Z) are ideally real variables and, in practice, samples coded on n bits (typically n=4)." '747 Pat., 11:30-32. (Mitz., ¶ 39.) Because the intrinsic record and Marvell's own extrinsic evidence is contrary to Marvell's construction, it should be rejected by the Court.

E. "iterative decoding procedure"

France Telecom's Proposed Construction	Marvell's Proposed Construction
No construction necessary.	No construction necessary.

In its brief, Marvell acquiesces to France Telecom's view that the phrase "iterative decoding

procedure" in Claim 10 does not require construction. Marvell misleadingly states, however, that "the parties appear to agree that each of steps [a]-[c] must be repeated in that order for each iteration." M. Br. at 22. France Telecom has taken no such position. In its opening brief, Plaintiff made clear that step [a], "in a first iteration, combining each of said received digital data elements with a predetermined value to form an intermediate data element," must be performed in the first iteration, and step [d], "and for all subsequent iterations, combining each of said received data elements with one of said estimated data elements estimated during a preceding iteration," must be performed in all subsequent iterations. *See* FT Br. at 20 ("Claim 10 therefore requires that step [a] be performed once, and that step [d] be performed thereafter until the process is completed."), 21 ("the language of the body of Claim 10 distinguishes between steps that are performed once, 'in a first iteration,' such as step [a], and steps that are performed 'in all subsequent iterations,' such as step [d].").

France Telecom does not agree that step [a] must be repeated after the first iteration. Claim 10 expressly provides only that step [a] is performed "in a first iteration." France Telecom likewise did not agree that steps [a]-[d] have to be performed in order. As a matter of law, the steps of a method ordinarily are not construed to require that they be performed in order, but an ordering of some or all steps can be required in certain circumstances. *See Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369-70 (Fed. Cir. 2003). France Telecom reserves the right to further address the meaning and scope of Claim 10 with respect to these issues should they become important in the future. Nevertheless, given Marvell's acquiescence, the construction of "iterative decoding procedure" is now moot, as Marvell has offered nothing to support any alternative to France Telecom's position.

III. CONCLUSION

To the extent that the Court concludes it needs to construe any of the terms that Marvell has requested for construction, the Court should adopt France Telecom's proposed constructions.

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